Network Working Group
Request for Comments: 776

J. Postel
ISI
January 1981

Obsoletes RFCs: 770, 762, 758,
755, 750, 739, 604, 503, 433, 349
Obsoletes IENs: 127, 117, 93

ASSIGNED NUMBERS

This Network Working Group Request for Comments documents the currently assigned values from several series of numbers used in network protocol implementations. This RFC will be updated periodically, and in any case current information can be obtained from Jon Postel. The assignment of numbers is also handled by Jon. If you are developing a protocol or application that will require the use of a link, socket, port, protocol, or network number please contact Jon to receive a number assignment.

Jon Postel
USC - Information Sciences Institute
4676 Admiralty Way
Marina del Rey, California 90291

phone: (213) 822-1511

ARPANET mail: POSTEL@ISIF

Most of the protocols mentioned here are documented in the RFC series of notes. The more prominent and more generally used are documented in the Protocol Handbook [17] prepared by the Network Information Center (NIC). Some of the items listed are undocumented. In all cases the name and mailbox of the responsible individual is indicated. In the lists that follow a bracketed entry, e.g. [17,iii], at the right hand margin of the page indicates a reference for the listed protocol, where the number cites the document and the "iii" cites the person.

ASSIGNED NETWORK NUMBERS

This list of network numbers is used in the internet address [8], the field is 8 bits in size.

Assigned Network Numbers

Decimal	Octal	Name	Network	References
0	0		Reserved	[JBP]
1	1	BBN-PR	BBN Packet Radio Network	[DCA2]
2	2	SF-PR-1	SF Packet Radio Network (1)	[JEM]
3	3	BBN-RCC	BBN RCC Network	[SGC]
4	4	SATNET	Atlantic Satellite Network	[DM11]
5	5	SILL-PR	Ft. Sill Packet Radio Network	[JEM]
6	6	SF-PR-2	SF Packet Radio Network (2)	[JEM]
7	7	CHAOS	MIT CHAOS Network	[MOON]
8	10	CLARKNET	SATNET subnet for Clarksburg	[DM11]
9	11	BRAGG-PR	Ft. Bragg Packet Radio Network	[JEM]
10	12	ARPANET	ARPANET	[17,1,VGC]
11	13	UCLNET	University College London	[PK]
12	14	CYCLADES	CYCLADES	[VGC]
13	15		Unassigned	[JBP]
14	16	TELENET	TELENET	[VGC]
15	17	EPSS	British Post Office EPSS	[PK]
16	20	DATAPAC	DATAPAC	[VGC]
17	21	TRANSPAC	TRANSPAC	[VGC]
18	22	LCSNET	MIT LCS Network	[43,10,DDC2]
19	23	TYMNET	TYMNET	[VGC]
20	24	DC-PR	D.C. Packet Radio Network	[VGC]
21	25	EDN	DCEC EDN	[EC5]
22	26	DIALNET	DIALNET	[26,16,MRC]
23	27	MITRE	MITRE Cablenet	[44,APS]
24	30	BBN-LOCAL	BBN Local Network	[SGC]
25	31	RSRE-PPSN	RSRE / PPSN	[BD2]
26	32	AUTODIN-II	AUTODIN II	[EC5]
27	33	NOSC-LCCN	NOSC / LCCN	[KTP]
28	34	WIDEBAND	Wide Band Satellite Network	[CJW2]
29	35	DCN-COMSAT	COMSAT Dist. Comp. Network	[DLM1]
30	36	DCN-UCL	UCL Dist. Comp. Network	[PK]
31	37	BBN-SAT-TEST	BBN SATNET Test Network	[DM11]
32	40	UCL-CR1	UCL Cambridge Ring 1	[PK]
33	41	UCL-CR2	UCL Cambridge Ring 2	[PK]
34	42	MATNET	Mobile Access Terminal Net	[DM11]
35	43	NULL	UCL/RSRE Null Network	[BD2]
36	44	SU-NET	Stanford University Ethernet	[MRC]

37	45	DECNET	Digital Equipment Network	[DRL]
38	46	DECNET-TEST	Test Digital Equipment Net	[DRL]
39	47	SRINET	SRI Local Network	[GEOF]
40	50	CISLNET	CISL Multics Network	[CH2]
41	51	BBN-LN-TEST	BBN Local Network Testbed	[KTP]
42-254	50-376		Unassigned	[JBP]
255	377		Reserved	[JBP]

ASSIGNED INTERNET VERSION NUMBERS

In the Internet Protocol (IP) [33] there is a field to identify the version of the internetwork general protocol. This field is 4 bits in size.

Assigned Internet Version Numbers

Decimal	Octal	Version	References
0	0	Reserved	[JBP]
1-3	1-3	Unassigned	[JBP]
4	4	Internet Protocol	[33,JBP]
5	5	ST Datagram Mode	[20,JWF]
6-14	6-16	Unassigned	[JBP]
15	17	Reserved	[JBP]

ASSIGNED INTERNET PROTOCOL NUMBERS

In the Internet Protocol (IP) [33] there is a field, called Protocol, to identify the the next level protocol. This is an 8 bit field.

Assigned Internet Protocol Numbers

Decimal	Octal	Protocol Numbers	References
0	0	Reserved	[JBP]
1	1	raw internet datagrams	[33,JBP]
2	2	Unassigned	[JBP]
3	3	Gateway-to-Gateway	[48,49,VMS]
4	4	CMCC Gateway Monitoring Message	[18,19,DFP]
5	5	ST	[20,JWF]
6	6	TCP	[34,JBP]
7	7	UCL	[PK]
8	10	Unassigned	[JBP]
9	11	Secure	[VGC]
10	12	BBN RCC Monitoring	[VMS]
11	13	NVP	[12,DC]
12	14	PUP	[4,EAT3]
13	15	Pluribus	[RDB2]
14	16	Telenet	[RDB2]
15	17	XNET	[25,JFH2]
16	20	Chaos	[MOON]
17	21	User Datagram	[42,JBP]
18	22	Multiplexing	[13,JBP]
19	23	DCN	[DLM1]
20	24	TAC Monitoring	[RH6]
21-62	25-76	Unassigned	[JBP]
63	77	any local network	[JBP]
64	100	SATNET and Backroom EXPAK	[DM11]
65-68	101-104	Unassigned	[JBP]
69	105	SATNET Monitoring	[DM11]
70	106	Unassigned	[JBP]
71	107	Internet Packet Core Utility	[DM11]
72-75	110-113	Unassigned	[JBP]
76	114	Backroom SATNET Monitoring	[DM11]
77	115	Unassigned	[JBP]
78	116	WIDEBAND Monitoring	[DM11]
79	117	WIDEBAND EXPAK	[DM11]
80-254	120-376	Unassigned	[JBP]
255	377	Reserved	[JBP]

ASSIGNED PORT or SOCKET NUMBERS

Ports are used in the TCP [34] and sockets are used in the AHHP [28,17] to name the ends of logical connections which carry long term conversations. For the purpose of providing services to unknown callers a service contact socket is defined. This list specifies the port or socket used by the server process as its contact socket. In the AHHP an Initial Connection Procedure ICP [39,17] is used between the user process and the server process to make the initial contact and establish the long term connections leaving the contact socket free to handle other callers. In the TCP no ICP is necessary since a port may engage in many simultaneous connections.

The assigned ports/sockets use a small part of the possible port/socket numbers. The assigned ports/sockets have all except the low order eight bits cleared to zero. The low order eight bits are specified here.

Socket Assignments:

General Assignments:

Decimal	Octal	Description
0-63	0-77	Network Wide Standard Function
64-131	100-203	Hosts Specific Functions
132-223	204-337	Reserved for Future Use
224-255	340-377	Any Experimental Function

Specific Assignments:

Network Standard Functions

Decimal	Octal	Description	References
1	1	Old Telnet	[40,JBP]
3	3	Old File Transfer	[27,11,24,JBP]
5	5	Remote Job Entry	[6,17,JBP]
7	7	Echo	[35,JBP]
9	11	Discard	[32,JBP]
11	13	Who is on or SYSTAT	[JBP]
13	15	Date and Time	[JBP]
15	17	Who is up or NETSTAT	[JBP]
17	21	Short Text Message	[JBP]
19	23	Character generator or TTYTST	[31,JBP]
21	25	New File Transfer	[36,JBP]
23	27	New Telnet	[41,JBP]
25	31	Unassigned	[JBP]
27	33	NSW User System w/COMPASS FE	[14,RHT]
29	35	MSG-3 ICP	[29,RHT]
31	37	MSG-3 Authentication	[29,RHT]
33	41	Unassigned	[JBP]
35	43	IO Station Spooler	[JBP]
37	45	Time Server	[22,JBP]
39	47	Unassigned	[JBP]
41	51	Graphics	[46,17,JBP]
42	52	Name Server	[38,JBP]
43	53	WhoIs	[JAKE]
45	55	Message Processing Module	[37,JBP]
47	57	NI FTP	[50,CJB]
49	61	RAND Network Graphics Conference	[30,MO2]
51	63	Unassigned	[JBP]
53	65	AUTODIN II FTP	[21,EC5]
55	67	ISI Graphics Language	[3,RB6]
57	71	Mail Transfer	[45,JBP]
59-63	73-77	Unassigned	[JBP]

Host Specific Functions

Decimal	Octal	Description	References
65	101	Unassigned	[JBP]
67	103	Datacomputer at CCA	[8,JZS]
69	105	Unassigned	[JBP]
69	105	Trivial File Transfer	[47,KRS]
71	107	NETRJS (EBCDIC) at UCLA-CCN	[5,17,RTB]
73	111	NETRJS (ASCII-68) at UCLA-CCN	[5,17,RTB]
75	113	NETRJS (ASCII-63) at UCLA-CCN	[5,17,RTB]
77	115	any private RJE server	[JBP]
79	117	Name or Finger	[23,17,KLH]
81	121	Unassigned	[JBP]
83	123	MIT ML Device	[MOON]
85	125	MIT ML Device	[MOON]
87	127	any terminal link	[JBP]
89	131	SU/MIT Telnet Gateway	[MRC]
91	133	MIT Dover Spooler	[EBM]
93	135	Unassigned	[JBP]
95	137	SUPDUP	[15,MRC]
97	141	Datacomputer Status	[8,JZS]
99	143	CADC - NIFTP via UCL	[PLH]
101	145	NPL - NIFTP via UCL	[PLH]
103	147	BNPL - NIFTP via UCL	[PLH]
105	151	CAMBRIDGE - NIFTP via UCL	[PLH]
107	153	HARWELL - NIFTP via UCL	[PLH]
109	155	SWURCC - NIFTP via UCL	[PLH]
111	157	ESSEX - NIFTP via UCL	[PLH]
113	161	RUTHERFORD - NIFTP via UCL	[PLH]
115-129	163-201	Unassigned	[JBP]
131	203	Datacomputer	[8,JZS]

Reserved for Future Use

Decimal	Octal	Description	References
132-223	204-337	Reserved	[JBP]

Experimental Functions

Decimal	Octal	Description	References
224-239	340-357	Unassigned	[JBP]
241	361	NCP Measurement	[9,JBP]
243	363	Survey Measurement	[2,AV]
245	365	LINK	[7,RDB2]
247	367	TIPSRV	[RHT]
249-255	371-377	RSEXEC	[51,RHT]

ASSIGNED LINK NUMBERS

The word "link" here refers to a field in the original ARPANET Host/IMP interface leader. The link was originally defined as an 8 bit field. Some time after the ARPANET Host-to-Host (AHHP) protocol was defined and, by now, some time ago the definition of this field was changed to "Message-ID" and the length to 12 bits. The name link now refers to the high order 8 bits of this 12 bit message-id field. The low order 4 bits of the message-id field are to be zero unless specifically specified otherwise for the particular protocol used on that link. The Host/IMP interface is defined in BBN report 1822 [1].

Link Assignments:

Decimal	Octal	Description	References
0	0	AHHP Control Messages	[28,17,JBP]
1	1	Reserved	[JBP]
2-71	2-107	AHHP Regular Messages	[28,17,JBP]
72-150	110-226	Reserved	[JBP]
151	227	CHAOS Protocol	[MOON]
152	230	PARC Universal Protocol	[4,EAT3]
153	231	TIP Status Reporting	[JGH]
154	232	TIP Accounting	[JGH]
155	233	Internet Protocol (regular)	[33,JBP]
156-158	234-236	Internet Protocol (experimental)	[33,JBP]
159-191	237-277	Measurements	[9,VGC]
192-195	300-303	Unassigned	[JBP]
196-255	304-377	Experimental Protocols	[JBP]
224-255	340-377	NVP	[12,17,DC]
248-255	370-377	Network Maintenance	[JGH]

DOCUMENTS

[1] BBN, "Specifications for the Interconnection of a Host and an IMP", Report 1822, Bolt Beranek and Newman, Cambridge, Massachusetts, May 1978.

[2] Bhushan, A., "A Report on the Survey Project", RFC 530, NIC 17375, 22 June 1973.

[3] Bisbey, R., D. Hollingworth, and B. Britt, "Graphics Language (version 2.1)", ISI/TM-80-18, USC/Information Sciences Institute, July 1980.

[4] Boggs, D., J. Shoch, E. Taft, and R. Metcalfe, "PUP: An Internetwork Architecture", XEROX Palo Alto Research Center, CSL-79-10, July 1979; also in IEEE Transactions on Communication, Volume COM-28, Number 4, April 1980.

[5] Braden, R., "NETRJS Protocol", RFC 740, NIC 42423, 22 November 1977. Also in [17].

[6] Bressler, B., "Remote Job Entry Protocol", RFC 407, NIC 12112, 16 October 72. Also in [17].

[7] Bressler, R., "Inter-Entity Communication -- An Experiment", RFC 441, NIC 13773, 19 January 1973.

[8] CCA, "Datacomputer Version 5/4 User Manual", Computer Corporation of America, August 1979.

[9] Cerf, V., "NCP Statistics", RFC 388, NIC 11360, 23 August 1972.

[10] Clark, D., "Revision of DSP Specification", Local Network Note 9, Laboratory for Computer Science, MIT, 17 June 1977.

[11] Clements, R., "FTPSRV -- Extensions for Tenex Paged Files", RFC 683, NIC 32251, 3 April 1975. Also in [17].

[12] Cohen, D., "Specifications for the Network Voice Protocol (NVP)", NSC Note 68, 29 January 1976. Also as USC/Information Sciences Institute RR-75-39, March 1976, and as RFC 741, NIC 42444, 22 November 1977. Also in [17].

[13] Cohen, D. and J. Postel, "Multiplexing Protocol", IEN 90, USC/Information Sciences Institute, May 1979.

[14] COMPASS, "Semi-Annual Technical Report", CADD-7603-0411, Massachusetts Computer Associates, 4 March 1976. Also as, "National Software Works, Status Report No. 1", RADC-TR-76-276, Volume 1, September 1976. And COMPASS. "Second Semi-Annual Report", CADD-7608-1611, Massachusetts Computer Associates, 16 August 1976.

[15] Crispin, M., "SUPDUP Protocol", RFC 734, NIC 41953, 7 October 1977. Also in [17].

[16] Crispin, M. and I. Zabala, "DIALNET Protocols", Stanford University Artificial Intelligence Laboratory, July 1978.

[17] Feinler, E. and J. Postel, eds., "ARPANET Protocol Handbook", NIC 7104, for the Defense Communications Agency by SRI International, Menlo Park, California, Revised January 1978.

[18] Flood Page, D., "Gateway Monitoring Protocol", IEN 131, February 1980.

[19] Flood Page, D., "CMCC Performance Measurement Message Formats", IEN 157, September 1980.

[20] Forgie, J., "ST - A Proposed Internet Stream Protocol", IEN 119, M.I.T. Lincoln Laboratory, September 1979.

[21] Forsdick, H., and A. McKenzie, "FTP Functional Specification", Bolt Beranek and Newman, Report 4051, August 1979.

[22] Harrenstien, K., J. Postel, "Time Server", IEN 142, April 1980. Also in [17].

[23] Harrenstien, K., "Name/Finger", RFC 742, NIC 42758, 30 December 1977. Also in [17].

[24] Harvey, B., "One More Try on the FTP", RFC 691, NIC 32700, 6 June 1975.

[25] Haverty, J., "XNET Formats for Internet Protocol Version 4", IEN 158, October 1980.

[26] McCarthy, J. and L. Earnest, "DIALNET", Stanford University Artificial Intelligence Laboratory, Undated.

[27] McKenzie, A., "File Transfer Protocol", RFC 454, NIC 14333, 16 February 1973.

[28] McKenzie,A., "Host/Host Protocol for the ARPA Network", NIC 8246, January 1972. Also in [17].

[29] NSW Protocol Committee, "MSG: The Interprocess Communication Facility for the National Software Works", CADD-7612-2411, Massachusetts Computer Associates, BBN 3237, Bolt Beranek and Newman, Revised 24 December 1976.

[30] O'Brien, M., "A Network Graphical Conferencing System", RAND Corporation, N-1250-ARPA, August 1979.

[31] Postel, J., "Character Generator Process", RFC 429, NIC 13281, 12 December 1972.

[32] Postel, J., "Discard Process", RFC 348, NIC 10427, 30 May 1972.

[33] Postel, J., ed., "DOD Standard Internet Protocol", IEN 128, RFC 760, USC/Information Sciences Institute, NTIS ADA079730, January 1980. Appears in: Computer Communication Review, Special Interest Group on Data Communications, ACM, V.10, N.4, October 1980.

[34] Postel, J., ed., "DOD Standard Transmission Control Protocol", IEN 129, RFC 761, USC/Information Sciences Institute, NTIS ADA082609, January 1980. Appears in: Computer Communication Review, Special Interest Group on Data Communications, ACM, V.10, N.4, October 1980.

[35] Postel, J., "Echo Process", RFC 347, NIC 10426, 30 May 1972.

[36] Postel, J., "File Transfer Protocol", RFC 765, IEN 149, June 1980.

[37] Postel, J., "Internet Message Protocol", RFC 759, IEN 113, USC/Information Sciences Institute, August 1980.

[38] Postel, J., "Name Server", IEN 116, USC/Information Sciences Institute, August 1979.

[39] Postel, J., "Official Initial Connection Protocol", NIC 7101, 11 June 1971. Also in [17].

[40] Postel, J., "Telnet Protocol", RFC 318, NIC 9348, 3 April 1972.

[41] Postel, J., "Telnet Protocol Specification", RFC 764, IEN 148, June 1980.

[42] Postel, J., "User Datagram Protocol", RFC 768 USC/Information Sciences Institute, August 1980.

[43] Reed, D., "Protocols for the LCS Network", Local Network Note 3, Laboratory for Computer Science, MIT, 29 November 1976.

[44] Skelton, A., S. Holmgren, and D. Wood, "The MITRE Cablenet Project", IEN 96, April 1979.

[45] Sluizer, S., and J. Postel, "Mail Transfer Protocol", RFC 772, USC/Information Sciences Institute, September 1980.

[46] Sproull, R., and E. Thomas. "A Networks Graphics Protocol", NIC 24308, 16 August 1974. Also in [17].

[47] Sollins, K., "The TFTP Protocol", IEN 133, MIT/LCS, January 1980.

[48] Strazisar, V., "Gateway Routing: An Implementation Specification", IEN 30, Bolt Berenak and Newman, April 1979.

[49] Strazisar, V., "How to Build a Gateway", IEN 109, Bolt Berenak and Newman, August 1979.

[50] The High Level Protocol Group, "A Network Independent File Transfer Protocol", INWG Protocol Note 86, December 1977.

[51] Thomas, R., "A Resource Sharing Executive for the ARPANET", AFIPS Conference Proceedings, 42:155-163, NCC, 1973.

PEOPLE

[DCA2]	Don Allen	BBN	Allen@BBND
[CJB]	Chris Bennett	UCL	UKSAT@ISIE
[RB6]	Richard Bisbey	ISI	Bisbey@ISIB
[RTB]	Bob Braden	UCLA	Braden@ISIA
[RDB2]	Robert Bressler	BBN	Bressler@BBNE
[EC5]	Ed Cain	DCEC	cain@EDN-Unix
[VGC]	Vint Cerf	ARPA	Cerf@ISIA
[SGC]	Steve Chipman	BBN	Chipman@BBNA
[DDC2]	David Clark	MIT	Clark@MIT-Multics
[DC]	Danny Cohen	ISI	Cohen@ISIB
[MRC]	Mark Crispin	Stanford	Admin.MRC@SU-SCORE
[BD2]	Brian Davies	RSRE	T45@ISIE
[JAKE]	Jake Feinler	SRI	Feinler@SRI-KL
[DFP]	David Flood Page	BBN	DFloodPage@BBNE
[JWF]	Jim Forgie	LL	Forgie@BBNC
[GEOF]	Geoff Goodfellow	SRI	Geoff@DARCOM-KA
[KLH]	Ken Harrenstien	MIT	KLH@MIT-AI
[JFH2]	Jack Haverty	BBN	JHaverty@BBN-Unix
[JGH]	Jim Herman	BBN	Herman@BBNE
[PLH]	Peter Higginson	UCL	UKSAT@ISIE
[RH6]	Robert Hinden	BBN	Hinden@BBNE
[CH2]	Charles Hornig	Honeywell	Hornig@MIT-Multics
[PK]	Peter Kirstein	UCL	Kirstein@ISIA
[DRL]	David Lyons	DEC	Lyons@DEC-2136
[JEM]	Jim Mathis	SRI	Mathis@SRI-KL
[DM11]	Dale McNeill	BBN	DMcNeill@BBNE
[DLM1]	David Mills	COMSAT	Mills@ISIE
[MOON]	David Moon	MIT	Moon@MIT-MC
[EBM]	Eliot Moss	MIT	EBM@MIT-XX
[MO2]	Michael O'Brien	RAND	OBrien@RAND-Unix
[KTP]	Ken Pogran	BBN	Pogran@BBND
[JBP]	Jon Postel	ISI	Postel@ISIF
[JZS]	Joanne Sattely	CCA	JZS@CCA
[APS]	Anita Skelton	MITRE	skelton@MITRE
[KRS]	Karen Sollins	MIT	Sollins@MIT-XX
[VMS]	Virginia Strazisar	BBN	Strazisar@BBNA
[EAT3]	Ed Taft	XEROX	Taft.PA@PARC
[RHT]	Robert Thomas	BBN	Thomas@BBNA
[AV]	Al Vezza	MIT	AV@MIT-XX
[CJW2]	Cliff Weinstein	LL	cjw@LL-11